CLAIMS:

1. A composite comprising an interlayer disposed between a first interpenetrating layer and a second interpenetrating layer, the interlayer consisting essentially of a porous material, the first interpenetrating layer partially interpenetrating the interlayer, and the second interpenetrating layer partially interpenetrating the interlayer.

2. The composite according to claim 1, wherein the porous material is a fibrous mat, scrim or fabric, a pitted or perforated metal strip or block, or a porous clay.

3. The composite according to claim 1, wherein the porous material is a fibrous mat, scrim, fabric, sheet or strip.

4. The composite according to claim 3, wherein the fibrous mat, scrim, fabric, sheet or strip comprises glass fibers, metallic fibers, metallic oxide fibers, ceramic fibers, cellulose fibers, asbestos fibers, plastic fibers or hybrids thereof.

5. The composite according to claim 3, wherein the fibrous mat, scrim or fabric comprises glass fibers or polyester fibers.

6. The composite according to claim 1, wherein the interpenetrating layers are the same or different and each interpenetrating layer comprises a polymer, a metal or metal alloy, a glass, a ceramic, a composite thereof, or a combination thereof.

7. The composite according to claim 1, wherein the interpenetrating layers are the same or different and each interpenetrating layer comprises a thermoplastic polymer, a thermoset polymer, an elastomeric polymer, a composite thereof, or a combination thereof.

8. The composite according to claim 1, wherein the interpenetrating layers are different and each interpenetrating layer comprises a polypropylene, a thermoplastic polypropylene/glass fiber composite, a thermoset polyester, a thermoset polyester/glass

fiber composite, a thermoset epoxy, a thermoset epoxy polymer/glass fiber composite, a maleic anhydride graft polypropylene, an ethylene-propylene rubber thermoplastic elastomer or an ethyl 2-cyanoacrylate adhesive.

9. The composite according to claim 1, wherein one or more substrates are bonded to one or more of the interpenetrating layers.

10. The composite according to claim 9, wherein the one or more substrates comprise a polymer, a metal or metal alloy, a glass, a ceramic, a composite thereof, or a combination thereof.

11. The composite according to claim 1, comprising more than one interlayer.

12. A process for bonding, the process comprising: providing an interlayer consisting essentially of a porous material; partially interpenetrating the interlayer with a first interpenetrating layer; and partially interpenetrating the interlayer with a second interpenetrating layer.

13. The process according to claim 12, wherein the porous material of the interlayer is laminated on to a melted surface of the first interpenetrating layer to thereby partially interpenetrate the interlayer with the first interpenetrating layer.

14. The process according to claim 13, wherein the first interpenetrating layer is provided in film form.

15. The process according to claim 12, further comprising bonding one or more substrates to one or more of the interpenetrating layers.

16. The process according to claim 12, wherein the interpenetrating layers are bonded to the interlayer sequentially.

17. The process according to claim 12, wherein the first interpenetrating layer is an adhesive to which a substrate is subsequently bonded.

18. The process according to claim 12, wherein the first interpenetrating layer is formed by coating a monomer or monomers or a polymer solution on to the porous material followed by curing the monomer or monomers or evaporating solvent from the solution.

19. The process according to claim 12, wherein a wet mixture of a ceramic material is coated on to the porous material followed by drying to form a green body.

20. The process according to claim 19, wherein the green body is sintered or hot pressed.

21. A composite comprising an interlayer disposed between a first interpenetrating layer and a second interpenetrating layer,

the interlayer consisting essentially of a porous fibrous mat, scrim, fabric, sheet or strip comprising glass fibers and/or polyester fibers,

the first interpenetrating layer partially interpenetrating the interlayer and comprising a polypropylene, a thermoplastic polypropylene/glass fiber composite, a thermoset polyester, a thermoset polyester/glass fiber composite, a thermoset epoxy, a thermoset epoxy polymer/glass fiber composite, a maleic anhydride graft polypropylene, an ethylene-propylene rubber thermoplastic elastomer or an ethyl 2-cyanoacrylate adhesive, and

the second interpenetrating layer partially interpenetrating the interlayer and comprising a polypropylene, a thermoplastic polypropylene/glass fiber composite, a thermoset polyester, a thermoset polyester/glass fiber composite, a thermoset epoxy, a thermoset epoxy polymer/glass fiber composite, a maleic anhydride graft polypropylene,

an ethylene-propylene rubber thermoplastic elastomer or an ethyl 2-cyanoacrylate adhesive.

22. The composite according to claim 21, further comprising a substrate adhered to one or more of the interpenetrating layers.